

### PROVISIONAL SUNSPOT RELATIVE NUMBERS FOR JULY 1938

[Dependent alone on observations at Zurich]

[Data furnished through the courtesy of Prof. W. Brunner, Eidgen. Sternwarte, Zurich, Switzerland]

- July 1: Great eruptive prominence on west limb.  
 July 3: Middle large bright chromospheric eruption at 13<sup>h</sup> 30<sup>m</sup> to 13<sup>h</sup> 38<sup>m</sup> U. T., east.  
 July 4: Middle large bright chromospheric eruptions (2 centers) at 7<sup>h</sup> 10<sup>m</sup> to 7<sup>h</sup> 20<sup>m</sup> and 12<sup>h</sup> 00<sup>m</sup> to 12<sup>h</sup> 35<sup>m</sup>, west.  
 July 5: Middle bright chromospheric eruption at 13<sup>h</sup> 45<sup>m</sup> to 14<sup>h</sup> 10<sup>m</sup>, west.  
 July 10: Large bright chromospheric eruption at 15<sup>h</sup> 32<sup>m</sup> to 15<sup>h</sup> 37<sup>m</sup>, central zone.  
 July 28: Great eruptive prominence on west limb at 13<sup>h</sup> 58<sup>m</sup> to 15<sup>h</sup> 35<sup>m</sup>.

July 1938	Relative numbers	July 1938	Relative numbers	July 1938	Relative numbers
1-----	<i>ad</i> 119	11-----	205	21-----	147
2-----	<i>Eac</i> —	12-----	<i>a</i> 211	22-----	<i>Ec</i> 118
3-----	<i>a</i> 157	13-----	229	23-----	<i>Macd</i> 157
4-----	<i>dd</i> 151	14-----	<i>Ebc</i> 208	24-----	<i>aad</i> —
5-----	141	15-----	<i>a</i> 200	25-----	202
6-----	<i>Ecd</i> 184	16-----	173	26-----	<i>a</i> 179
7-----	<i>b</i> 175	17-----	161	27-----	156
8-----	<i>d</i> 186	18-----	<i>d</i> 148	28-----	<i>a</i> 151
9-----	<i>d</i> 175	19-----	<i>Eac</i> 151	29-----	<i>aa</i> 151
10-----	<i>ab</i> 183	20-----	<i>EMcc</i> 153	30-----	<i>a</i> 139
				31-----	109

Mean, 29 days = 166.2

*a* = Passage of an average-sized group through the central meridian.

*b* = Passage of a large group or spot through the central meridian.

*c* = New formation of a group developing into a middle-sized or large center of activity: E, on the eastern part of the sun's disk; W, on the western part; M, in the central circle zone.

*d* = Entrance of a large or average-sized center of activity on the east limb.

### AEROLOGICAL OBSERVATIONS

[Aerological Division, D. M. LITTLE in Charge]

By B. FRANCIS DASHIELL

The mean free-air data for the month of July 1938, given in table 1, are based on a total of 366 airplane and radiometeorograph observations. They include the basic meteorological elements of barometric pressure (P), temperature (T), and relative humidity (R. H.), recorded at certain geometric heights. The reduced number of observations obtained in July was unavoidable because of the hiatus that existed when certain airplane stations were discontinued and radiometeorograph observations substituted therefor.

These "means" are computed by the customary method of differences, but are omitted whenever less than 15 observations have been made at the surface and less than 5 at a standard height. At those levels, however, which fall within the limits of the monthly vertical range of the tropopause, at least 15 observations are necessary. For further details, see "Aerological Observations," in the January 1938, issue of the MONTHLY WEATHER REVIEW.

Chart I, published elsewhere in this REVIEW, shows the departure of mean surface temperature from the normal. The temperature was slightly in excess of normal over most of the country, particularly so in the far Northwest, where it was decidedly warm (+6° F.), and in the Central Plains States, where it was moderately warm (+4° F.). In the Southeast, western Texas, and New Mexico, the mean temperature was slightly below normal (−2° F.).

Free-air mean temperatures at all levels above the surface, for all but one station in the United States, ranged seasonally higher than during the preceding month of June. The greatest positive differences in mean free-air temperatures for July over June were noted at San Diego, Calif., at 1 kilometer (5.7° C.); over Spokane, Wash., at 1.5 and 2 kilometers (5.4° C. and 5.2° C., respectively); over Seattle, Wash., at 2.5, 3, and 4 kilometers (4.9° C., 4.5° C., and 4.2° C., respectively); and over Washington, D. C., at 5 kilometers (3.2° C.). The only negative free-air temperature differences for July over June, occurred over El Paso, Tex., at 1.5, 2, 2.5, and 3 kilometers (0.9° C., 1.1° C., 1.0° C., and 0.9° C., respectively). July temperatures were slightly lower, however, than during the corresponding month in 1937, except over Seattle, Wash., where July 1938 averaged at least 3° C. warmer at all levels.

Temperatures were highest over the Southeast at 0.5 kilometer, and remained high also over the Southern Rocky Mountain States and California at all other levels. The lowest mean free-air temperatures occurred over the North Atlantic States and the far Northwest at all levels. Actually, the highest temperatures for the current month were recorded over Pensacola, Fla., at 0.5 kilometers; over San Diego, Calif., and Spokane, Wash., at 1 kilometer; over Salt Lake City, Utah, at 1.5, 2 and 2.5 kilometers; over San Diego, Calif., and Salt Lake City, Utah, at 3 kilometers; over San Diego, Calif., at 4 kilometers; and over El Paso, Tex., at 5 kilometers. The highest mean temperature of the month (23.6° C.) occurred over Pensacola, Fla., at 0.5 kilometer, while the lowest of the month (−7.8° C.) was recorded over Lakehurst, N. J., at 5 kilometers. Also, low temperatures were recorded over Lakehurst, N. J., and Seattle, Wash., at all levels above 0.5 kilometer.

Isobaric charts, prepared from the mean barometric pressures in millibars, as given in table 1, show that in July pressure was high over the Southeast and far Northwest up to 2 kilometers, and above that level over the Southern States. At 2.5 and 3.0 kilometers pressures were uniformly distributed in a belt across the central United States, extending from the Atlantic to the Pacific. During July mean pressures varied but little from those recorded in June, except they were somewhat greater in the lower levels, and definitely so at 4 and 5 kilometers. A slight statistical center of low atmospheric pressure existed in the lower levels over Norfolk, Va., but shifted northward to Lakehurst, N. J., and then to New England at the higher levels.

The distribution of free-air relative humidity (table 1) varied considerably from that noted during the preceding month. The humidity at all levels was definitely in excess of that observed in June, and also higher than during the corresponding month of 1937, particularly at the upper levels. The relative humidity was greatest in the lower levels over Pensacola, Fla., and above 3 kilometers at El Paso, Tex. Lower humidities prevailed over Seattle and Spokane, Wash., and southern California, at all levels, while moderately high humidities occurred over the North Atlantic States.